National Institute of Environmental Health Sciences

Spatial diffusion of influenza outbreak-related climate factors in Chiang Mai Province, Thailand

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Abstract:

Influenza is one of the most important leading causes of respiratory illness in the countries located in the tropical areas of South East Asia and Thailand. In this study the climate factors associated with influenza incidence in Chiang Mai Province, Northern Thailand, were investigated. Identification of factors responsible for influenza outbreaks and the mapping of potential risk areas in Chiang Mai are long overdue. This work examines the association between yearly climate patterns between 2001 and 2008 and influenza outbreaks in the Chiang Mai Province. The climatic factors included the amount of rainfall, percent of rainy days, relative humidity, maximum, minimum temperatures and temperature difference. The study develops a statistical analysis to quantitatively assess the relationship between climate and influenza outbreaks and then evaluate its suitability for predicting influenza outbreaks. A multiple linear regression technique was used to fit the statistical model. The Inverse Distance Weighted (IDW) interpolation and Geographic Information System (GIS) techniques were used in mapping the spatial diffusion of influenza risk zones. The results show that there is a significance correlation between influenza outbreaks and climate factors for the majority of the studied area. A statistical analysis was conducted to assess the validity of the model comparing model outputs and actual outbreaks.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3524600

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Sea Level Rise, Temperature

Extreme Weather Event: Drought, Flooding

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: Thailand

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Airborne Disease

Airborne Disease: Influenza

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Methodology

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified